REMARKS

This response is filed concurrent with an RCE. Claims 1-31 are pending. The Office Action objects to claim 11 and 28. Claims 1, 5, 17-18, and 22 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 6,272,517 to Yue et al. ("Yue"). Claims 2-4, 7, 12, 19-21, 24, and 29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yue in view of U.S. Pat. No. 5,826,081 to Zolnowsky ("Zolnowsky"). Claims 6, 8, 23, and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yue in view of Engineering Excellence: DEC OSF/1 Symmetric Multi-Processing (hereinafter, "Hall"). Claims 9-11 and 26-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yue in view of Hall, and further in view of Zolnowsky. Claims 13-14 and 30-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yue in view of Zolnowsky, and further in view of Hall. Claims 15-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yue in view of U.S. Pat. App. Pub. No. 2003/0018510 to Sanches ("Sanches").

As set forth above, Applicants have made clarifying amendments to several claims in order to more particularly and distinctly claim various embodiments of the invention. These amendments are fully supported by the originally filed specification and do not add new matter. Claims 8 and 25 have been canceled. In light of the amendments and subsequent remarks, Applicants respectfully submit that the claims are in condition for allowance.

The Objection to Claims 11 and 28 is Overcome

Applicants appreciate the Examiner pointing out the claim language ambiguity in Claims 11 and 28. As set forth in the above listing of amended claims, Applicants have amended Claims 11 and 28 as suggested by the Office. Applicants therefore respectfully submit that the objection to Claims 11 and 28 is overcome.

The Rejection of Independent Claims 1, 17, and 18 under §102(b) is Overcome

Amended independent Claim 1 is directed to an apparatus comprising a processor

and a memory storing computer program code. The at least one memory and stored computer program code are configured, with the at least one processor, to cause the apparatus to at least implement a scheduler incorporating an algorithm for ordering the running of threads of execution having different priorities. The scheduler maintains a ready list of threads which are scheduled to run on the device, ordered by priority. The at least one memory and stored computer program code are configured, with the at least one processor, to further cause the apparatus to implement at least one locking mechanism configured to block access to a resource from all threads except for a thread that holds the locking mechanism. The locking mechanism(s) comprise(s) a mutex including a pointer. The pointer included in the mutex is recited to point to the thread holding the mutex or to be null if the mutex is free. The mutex is further recited to include a flag indicating whether or not the mutex is contested. In an instance in which the scheduler selects a thread on the ready list to run, but the selected thread is blocked from running because a resource it requires is blocked, the scheduler does not switch to the blocked thread but retains the blocked thread in its place by priority on the ready list and instead yields to the thread which holds the locking mechanism and causes the thread which holds the locking mechanism to run. Independent Claims 17 and 18 are directed to a method and a non-transitory computer readable storage medium, respectively, and, though each has its own respective scope, have been amended to recite features substantially similar to those of Claim 1 insofar as this discussion is concerned.

The Office alleges that the independent claims (Claims 1, 17, and 18) are anticipated by Yue. While Applicants respectfully disagree with the position of the Office, Applicants have amended the independent claims to clarify that in the embodiments claimed in Claims 1, 17, and 18, the locking mechanism(s) comprise(s) a mutex including a pointer. The pointer included in the mutex is recited to point to the thread holding the mutex or to be null if the mutex is free. The mutex is further recited to include a flag indicating whether or not the mutex is contested. These features added to the independent claims are substantially similar to those formerly recited in now-cancelled Claim 8, which the Office admitted were not taught by Yue. The Office did, however, allege that the features of Claim 8 were taught by Hall. However, this

allegation is improper, as Hall clearly fails to teach or suggest any of the features recited in Claim 8, which have been added into the independent claims. As such, even when taken in combination with Yue, Hall fails to cure the admitted deficiencies of Yue.

More particularly, with respect to the clear deficiencies of Hall, the independent claims have been amended to recite the feature of the mutex including a pointer that points to the thread holding the mutex, or that is null if the mutex is free. In rejecting Claim 8, the Office alleged that a mutex including a pointer was described on page 6 of Hall. However, the portion of Hall relied upon by the Office merely describes a process ID (PID), which is a number "used as an index to the pidtab." Clearly, a number correlating to an index of a pidtab does not teach or suggest a pointer to a thread holding the mutex. Moreover, an even more blatant logical error in the Office's rejection is the fact that Hall does not teach or suggest that the PID is included in a mutex. Indeed, the PID is described in a section subsequent to the description of mutexes, entitled "Algorithm Replacement." *See,* page 6, line 2 of Hall. Accordingly, the Office cannot allege that the PID disclosed by Hall teaches or suggests a pointer included in a mutex, as recited by the amended independent claims.

It is further noted that the Office alleges with respect to the features of the pointer pointing to the thread holding the mutex or being null if the mutex is free, that page 5, col. 1, lines 47-54 – col. 2, lines 1-7 of Hall teach these features, noting that this section of Hall "describe lock testing to check if the resource is free." First of all, regardless of what this section of Hall discloses, as noted above, Hall fails to teach or suggest a mutex including a pointer and, as such, clearly fails to teach or suggest the feature of the pointer included in the mutex pointing to the thread holding the mutex or being null if the mutex is free. Moreover, notwithstanding the logical fallacy of the Office's rejection, even assuming *in arguendo* that the cited portion of Hall does "describe lock testing to check if the resource is free," such lock testing does not teach or suggest a pointer included in the mutex pointing to the thread holding the mutex or being null if the mutex is free, as featured in the amended independent claims.

Moreover, it will be appreciated that the amended independent claims further recite the feature of the mutex including a flag indicating whether or not the mutex is

contested. The Office alleges that this feature is taught by page 5, col. 1, lines 24-26 of Hall. However, the portion of Hall relied upon by the Office relates to spin locks. It will be readily appreciated by a person having ordinary skill in the art that a spin lick is distinct from a mutex, and that there is no teaching or suggestion in Hall that the spin lock may be included in a mutex. Indeed, by Hall's own admission, "[t]he different types of locks are..."spin locks" and "semaphores." Hall states that semaphores are also known as mutexes. *See,* page 5, col. 1, lines 4-10 of Hall. Accordingly, Hall draws a clear line of distinction between spin locks and mutexes, which is made abundantly clear by the section headings on page 5 of Hall. As such, Hall clearly fails to teach or suggest a mutex including a flag indicating whether or not the mutex is contested.

For at least the foregoing reasons, Applicants respectfully submit that it is clear that Hall, even when taken in combination with Yue, fails to cure the admitted deficiencies of Yue. As such, the combination of Yue and Hall fails to teach or suggest each feature recited in the amended independent claims. Moreover, none of the other cited references, whether taken alone or in combination with Yue and Hall, cure the deficiencies of the combination of Yue and Hall. Applicants therefore respectfully submit that the amended independent claims are patentably distinct from the cited references, taken alone or in combination, such that the rejection is overcome. Applicants further respectfully submit that the independent claims are in condition for allowance.

The Rejection of the Dependent Claims is Overcome

Because each of the dependent claims includes each of the recitations of a respective independent base claim, Applicants further submit that the dependent claims are patentably distinguishable from the cited references, taken alone or in combination, for at least those reasons discussed above. Accordingly, Applicants respectfully submit that the rejections of the dependent claims are overcome and the dependent claims are in condition for allowance.

CONCLUSION

In view of the amended claims and remarks presented above, it is respectfully submitted that all of the present claims of the present application are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

Charles A. Leyes
Registration No. 61,317

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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